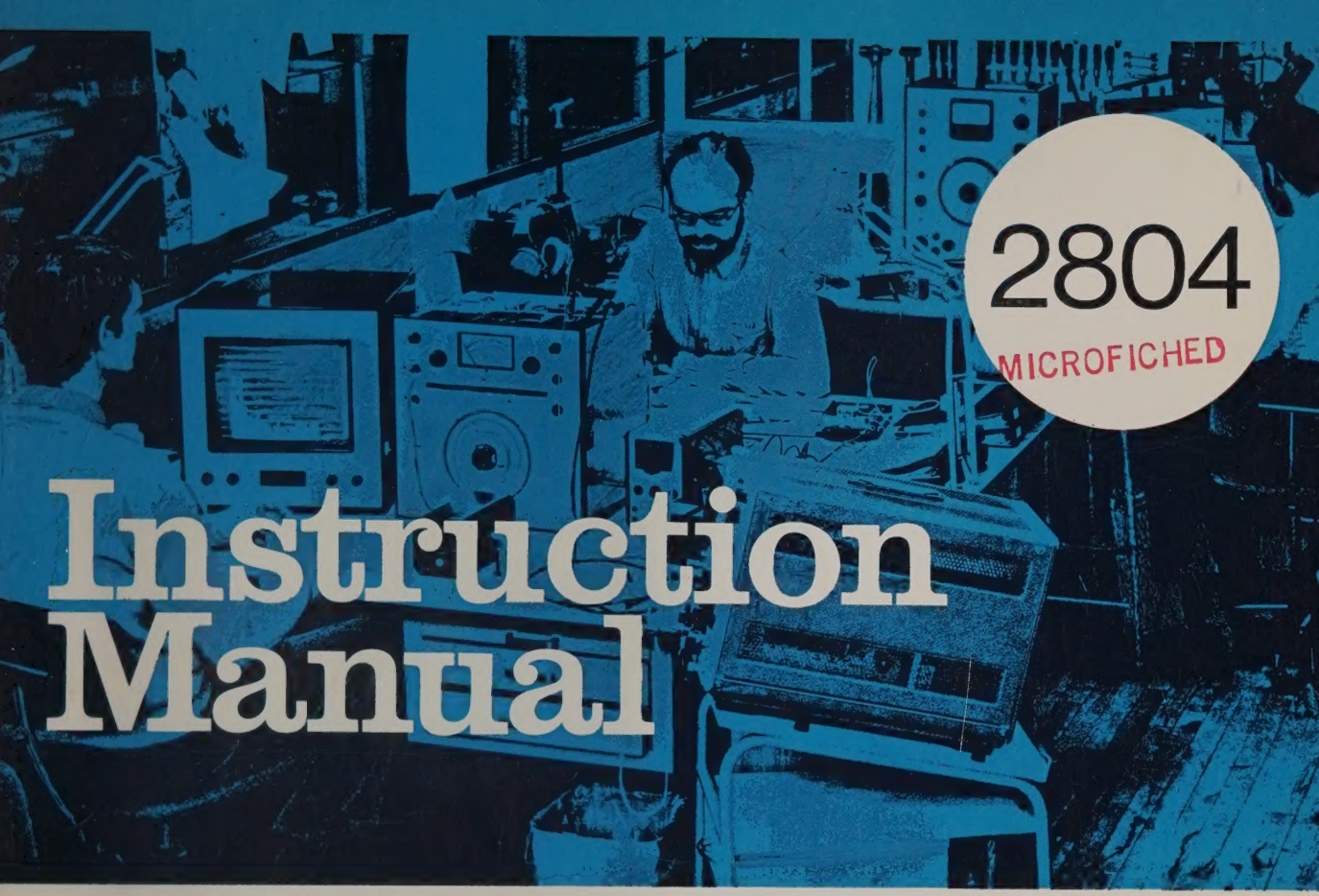
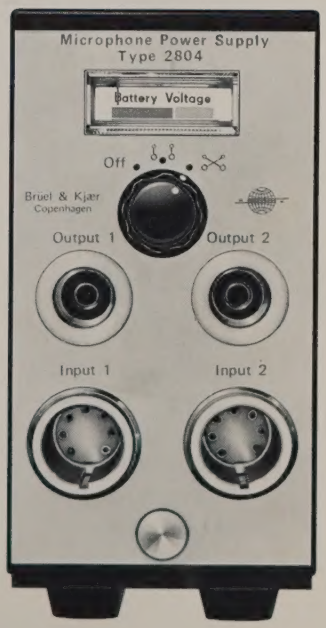


2804

MICROFICHED

# Instruction Manual

MICROFICHED




**Two Channel Battery Driven Power Supply Type 2804**

This battery driven, portable power supply provides power for two 2619 preamplifiers. In addition, it provides either 28 V or 200 V polarization voltage for B & K condenser microphones and 2 outputs of 28 V and 2 mA each for driving vibration pick-up pre-amplifiers. The Type 2804 is part of the B & K module system, making it a convenient part of a complete sound measuring system.

BRÜEL & KJÆR

033-0102

# MICROPHONE POWER SUPPLY

# TYPE 2804

June 1974

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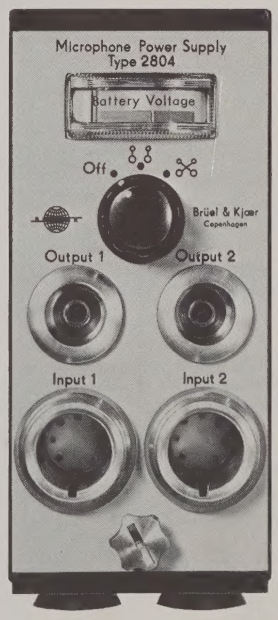
# Battery Driven Power Supply

FEATURES

- Two identical channels
- Cross switching between inputs and outputs
- 200 or 28 V polarization voltage supply for condenser microphones
- Fits B&K modular cassette system for rack mounting
- Standard 1.5 V dry cells
- Meter indication of battery condition
- Two 28 V 10–32 NF micro-socket outlets for preamplifiers

USES

- Field measurements of sound and vibration
- Field recording of data
- Measurements of sound insulation
- Traffic noise measurements




The Microphone Power Supply Type 2804 powers the B & K transistorized preamplifiers, especially the 2619 Half-inch Preamplifier for Condenser Microphones. It supplies 200 V or 28 V polarization voltage for the condenser microphone, and 28 V for the preamplifier.

Two channels are provided. The inputs and outputs can be interchanged by a single switch to facilitate measurement at two positions without reconnecting the equipment.

Two additional power output microsockets are available at the back, each supplying 28 V DC (for example to two Accelerometer Preamplifiers Type 2623). Maximum current is 2 x 2 mA or 1 x 4 mA.

The polarization voltage can be selected to be 200 V or 28 V by a contact on the printed circuit. The voltage can be checked from a socket at the back of the instrument. The 28 V polarization is used with Type 2619 and the 1/2" Condenser Microphone Type 4148.

To prevent battery drain the heating element in the 2619 is not powered from Type 2804. However, provision is made on the rear of the 2804 for feeding the heating element from an external 6 V DC supply.

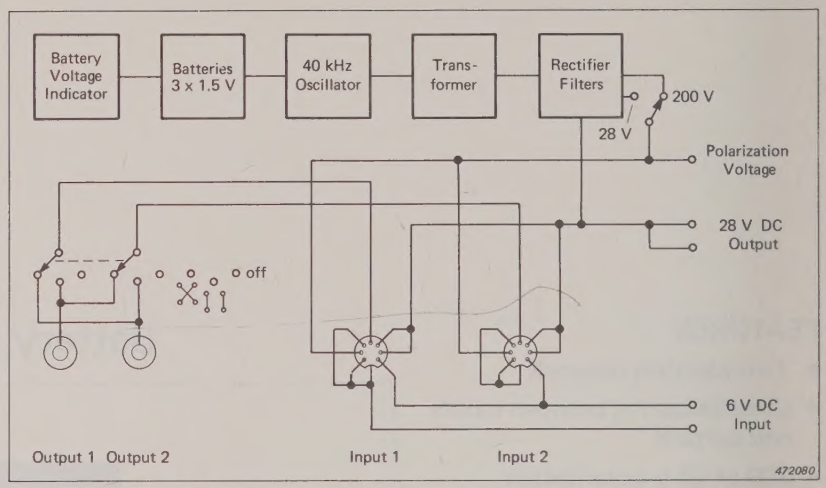



**Fig.1. Block Diagram of the Type 2804**

# Specifications 2804

**Inputs:**
Two 7 pin sockets for 1/2'' Microphone Preamplifiers Type 2619.

**Signal Outputs:**
Two standard 14 mm B & K sockets. Input to output connections interchangeable by front panel switch.

**28 V DC Outlets:**
Two 10–32 NF microsockets. Max. current 2 x 2 mA or 1 x 4 mA with no 2619 at the input. Short circuit protected.

**Temperature Range:**
With normal batteries 0 to 40°C.
With special batteries 0 to 60°C.
Storing conditions –25 to 70°C.

**Humidity Range:**
Up to 95% relative humidity at 40°C.

**Polarization Voltage:**
200 V or 28 V, selectable by movable contact in the printed circuit. Stability ± 2% for all conditions mentioned above and 3 to 5 V battery voltage.

**Noise and Ripple:**
Gives no additional noise on output of Type 2619.

**Attenuation:**
0 dB, both channels.

**Cross-Talk Attenuation:**
Better than 100 dB for frequencies below 20 kHz.
Better than 80 dB up to 200 kHz.

**Batteries:**
3 x 1.5 V, IEC Type R 20 (IEC Publication 86-2). 40 hours battery life for continuous operation with two 2619s. Battery condition continuously displayed on meter during operation.

**Sockets for Heating Element:**
Sockets are provided for a 6 V DC external source for heating element in Type 2619.

**Cabinet:**
Modular cassette KK 0022.

**Dimensions:**
Height: 132.6 mm (5.2 in)
Width: 69.5 mm (2.7 in)
Depth: 200.0 mm (7.9 in)

**Weight:**
1 kg (2.2 lb).
1.27 kg (2.8 lb) including batteries.

**Accessories:**
3 x 1.5 V batteries QB 0004, IEC Type R 20.

# 2. OPERATION

## 2.1 TERMINALS AND CONTROLS

### 2.1.1 Front Panel

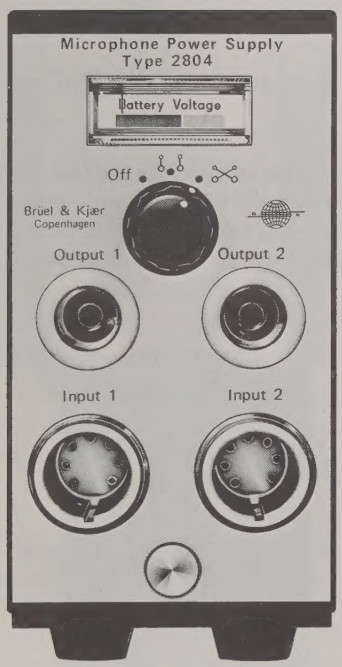



*Fig. 2.1. Front Panel of Type 2804*

BATTERY VOLTAGE INDICATOR — Indicates the condition of the batteries. When the needle is in the green region of the dial, the battery voltage is within the operating range of 3,5 V to 5 V. If the needle moves into the red zone the batteries should be replaced.

OUTPUT CONTROL KNOB — This knob controls what appears at the outputs of the 2804. In the "Off" position there is no power in the unit and therefore no output. In the "⚲ ⚲" position the signal from INPUT 1 appears at OUTPUT 1 and the signal from INPUT 2 at OUTPUT 2. In the "✕" position the signal from INPUT 1 appears at OUTPUT 2 and the signal from INPUT 2 appears at OUTPUT 1.

OUTPUTS 1 AND 2 — These terminals accept the standard JP 0101 plug and carry one or the other of the two input signals depending on the setting of the OUTPUT CONTROL KNOB.

INPUTS 1 AND 2

These terminals are the standard B & K microphone sockets accepting the JP 0701 seven pin plug. For connections, see Fig. 2.2.

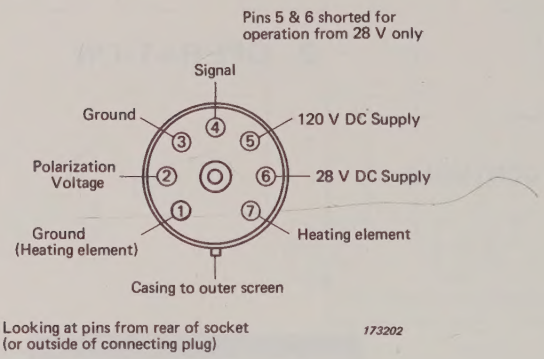

Pins 5 & 6 shorted for operation from 28 V only
Signal
Ground
120 V DC Supply
Polarization Voltage
28 V DC Supply
Ground (Heating element)
Heating element
Casing to outer screen
Looking at pins from rear of socket (or outside of connecting plug)
173202

*Fig. 2.2. Connection of INPUT sockets*

THUMB SCREW

This screw releases the bottom plate of the unit. One quarter turn is sufficient to release the bottom panel, which can then be slid rearwards. When this plate is removed a printed circuit card is revealed. On this card is a small rotary two position switch for selecting the polarisation voltage desired. (Fig. 2.3).

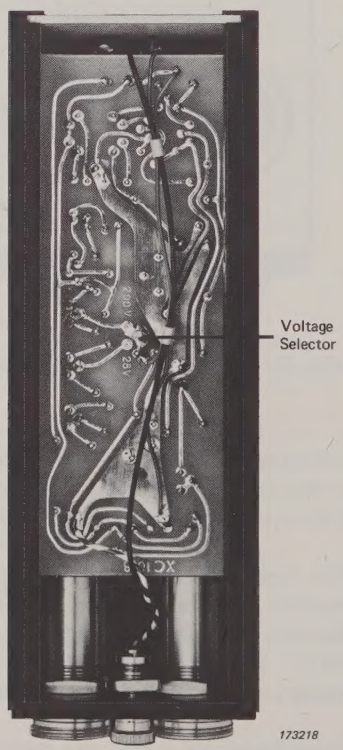



*Fig. 2.3. View of 2804 with bottom panel removed, showing polarisation voltage selector*

### 2.1.2 Rear Panel

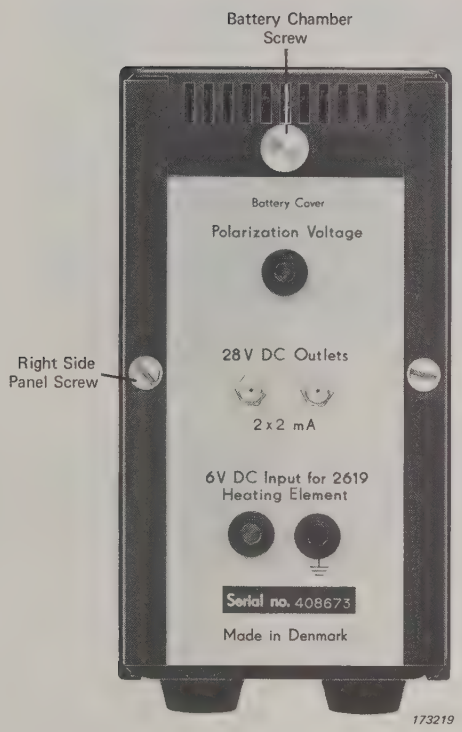



*Fig. 2.4. Rear Panel of Type 2804*

BATTERY COMPARTMENT SCREW

This screw holds the top plate on the unit. When it has been released (the screw is captive) the top plate can be slid off rearwards, revealing the battery contact plate. This contact plate is hinged and tilts back (Fig. 2.5) revealing the battery compartment. Batteries should always be inserted with polarities as indicated on the inside of the battery compartment.

POLARISATION VOLTAGE

This terminal is a test point for checking the polarisation voltage. A high impedance meter must be used for making this measurement.

**Warning:** The polarisation voltage should be measured or checked (Fig. 2.3) before use to prevent accidental connection of 200 V to a 28 V device. Connection of 200 V to a 28 V device may destroy it!

RIGHT SIDE PANEL SCREW

This screw holds the right side panel of the instrument (as viewed from the front). If the panel is removed it reveals the adjustment potentiometers. Should adjustments become necessary please consult the Service Instructions.

28 V DC OUTLETS

These two terminals accept coax connectors JP 0012 and provide 28 V DC at up to 4 mA total output to vibration pick-up preamplifiers or any device with similar power requirements.

6 V DC INPUT FOR 2619 HEATING ELEMENT

If the heating element of the microphone preamplifier is to be used it must have 6 V DC power. Since the 2804 does not produce 6 V DC it must be pro-

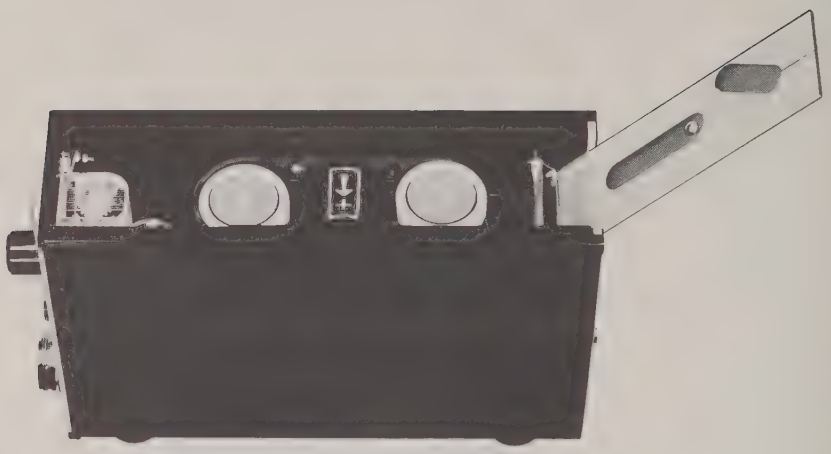


*Fig. 2.5. Battery Compartment of the 2804*

vided externally by means of a separate battery or power supply and may be applied through these two terminals. The terminals are connected to the appropriate pins of the INPUT sockets and accept banana jack connectors with ground going to the right hand terminal and 6 V to the other. (See Fig. 2.4.)

## 2.2 INSTALLATION IN MODULE SYSTEM

The 2804 is part of the B & K Module System. This system is designed for easy rack mounting of instrument combinations so that the entire measurement system may be conveniently assembled in the same rack.

2804s with serial numbers later than 408601 occupy two module units of the KK 0014 mounting frame. Full details are included with the Assembly Manual for systems KK, KQ, KS.

# 3. DESCRIPTION

The 2804 is a battery driven transistorized power supply which uses a 15 kHz oscillator and transformer to step the 3,5 V to 5 V battery voltage up to the 200 V polarisation voltage required by many condenser microphones. The stepped up voltage is half wave rectified and filtered at both 28 V and 200 V. The 200 V provides the polarisation voltage through a dropping network where a switch (Fig. 2.3) allows selection of two different points on the network, one adjusted to 200 V and the other to 28 V. The voltage rectified at 28 V goes directly to the 28 V DC OUTLET and to the biasing of the microphone preamplifiers.

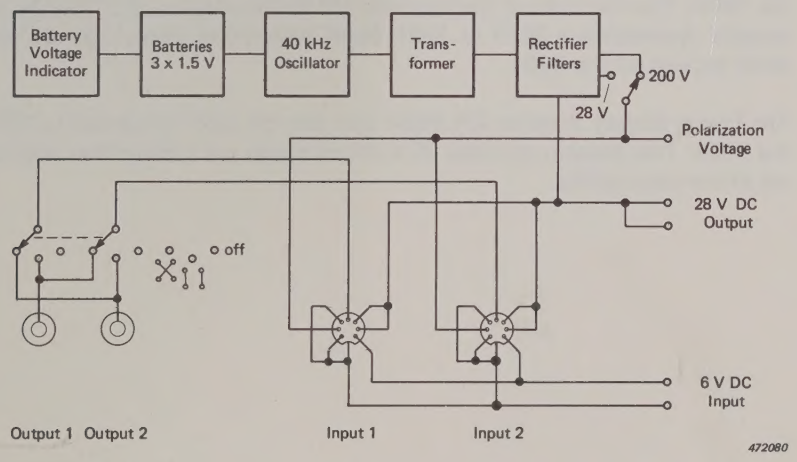



*Fig. 3.1. Block Diagram of Type 2804*

# 4. OTHER INSTRUMENTS FOR USE WITH 2804

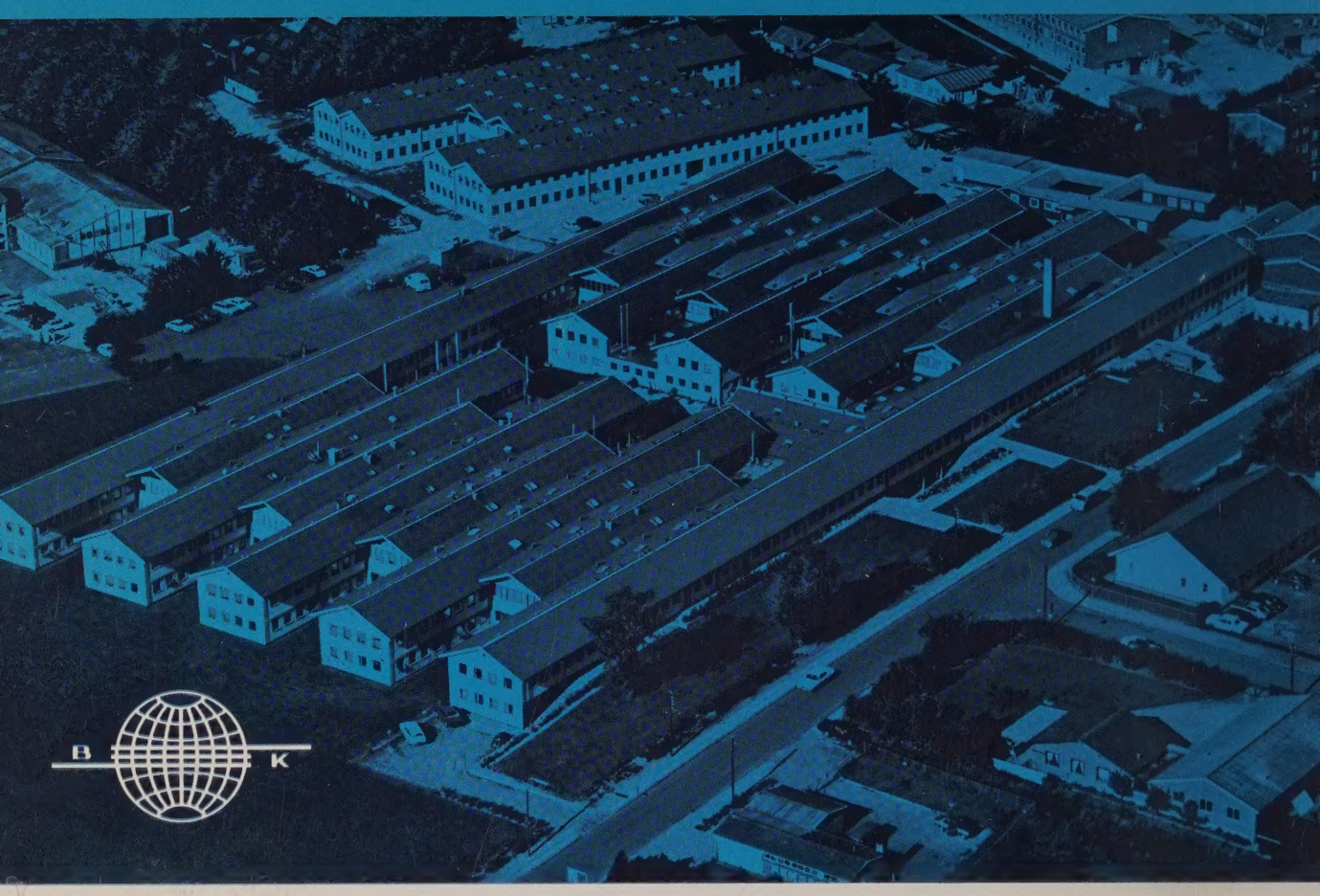
## 4.1 CONDENSER MICROPHONES AND PREAMPLIFIERS

Any of the B & K range of condenser microphones can be used together with a preamplifier Type 2619 or 2627 (Type 2615 is not suitable since it requires too much power). Either 200 V or 28 V polarisation is available, as described in Chapter 2.

## 4.2 ACCELEROMETERS AND PREAMPLIFIERS

A B & K accelerometer can be connected through the 2804 with its preamplifier powered from the 2804. The microphone preamplifier 2619 with adaptor JJ 2615 may be used, or the accelerometer preamplifiers 2623 or 2625 (with integration stages) can be powered from the rear panel sockets of the 2804.

The Power Supply Adaptor ZR 0024 may also be used connected to INPUT 1 or INPUT 2 of the 2804. This adaptor provides 28 V DC to power the preamplifier and accepts the output signal of the preamplifier.



**BRÜEL & KJÆR** instruments cover the whole field of sound and vibration measurements. The main groups are:

**ACOUSTICAL MEASUREMENTS**
Condenser Microphones
Piezoelectric Microphones
Microphone Preamplifiers
Sound Level Meters
Precision Sound Level Meters
Impulse Sound Level Meters
Standing Wave Apparatus
Noise Limit Indicators
Microphone Calibrators

**ACOUSTICAL RESPONSE TESTING**
Beat Frequency Oscillators
Random Noise Generators
Sine-Random Generators
Artificial Voices
Artificial Ears
Artificial Mastoids
Hearing Aid Test Boxes
Audiometer Calibrators
Telephone Measuring Equipment
Audio Reproduction Test Equipment
Tapping Machines
Turntables

**VIBRATION MEASUREMENTS**
Accelerometers
Force Transducers
Impedance Heads
Accelerometer Preamplifiers
Vibration Meters
Accelerometer Calibrators
Magnetic Transducers
Capacitive Transducers
Complex Modulus Apparatus

**VIBRATION TESTING**
Exciter Controls — Sine
Exciter Controls — Sine — Random
Exciter Equalizers, Random or Shock
Exciters
Power Amplifiers
Programmer Units
Stroboscopes

**STRAIN MEASUREMENTS**
Strain Gauge Apparatus
Multi-point Panels
Automatic Selectors

**MEASUREMENT AND ANALYSIS**
Voltmeters and Ohmmeters
Deviation Bridges
Measuring Amplifiers
Band-Pass Filter Sets
Frequency Analyzers
Real Time Analyzers
Heterodyne Filters and Analyzers
Psophometer Filters
Statistical Distribution Analyzers

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